NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA

SURATHKAL, MANGALORE - 575 025

Course Code – CS111

Course Name – Computer Programming Lab

Lab - 04

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Arrays

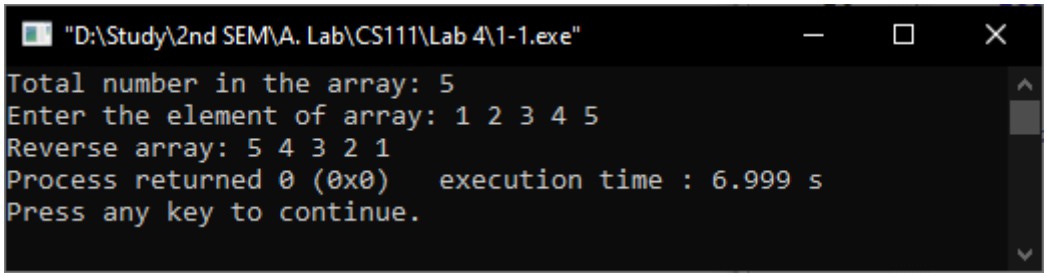
Question – 1

To read an array of N elements and reverse it

Answer

```c
#include<stdio.h>
int main()
{
    int n, i;
    printf("Total number in the array: ");
    scanf("%d", &n);
    int arr[n];
    printf("Enter the element of array: ");
    for(i=0; i<n; i++)
    {
        scanf("%d", (arr+i));
    }
    printf("Reverse array: ");
    for(i=n-1; i>=0; i--)
    {
        printf("%d ", *(arr+i));
    }
    return 0;
}
```

Output



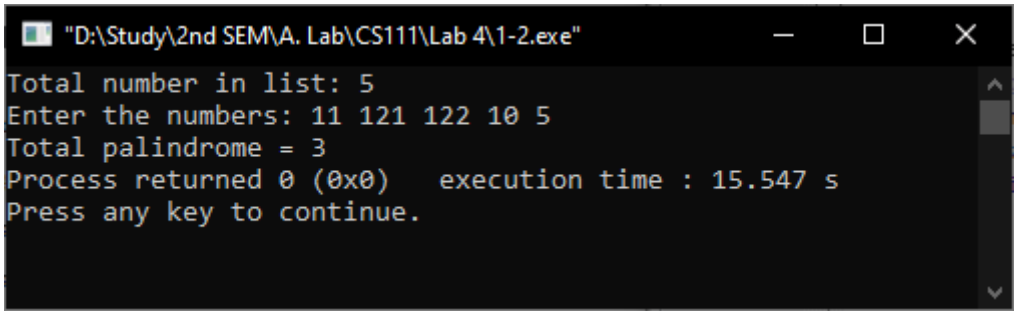
Question – 2

Program to count the number of palindromes in a given list of n numbers

Answer

```c
#include<stdio.h>
int main()
{
    int n, i, temp, rem, rev, count=0;
    printf("Total number in list: ");
    scanf("%d", &n);
    int arr[n];
    printf("Enter the numbers: ");
    for(i=0; i<n; i++)
    {
        scanf("%d", (arr+i));
        //palindromes check
        temp = *(arr+i);
        rev = 0;
        while(temp != 0)
        {
            rem = temp % 10;
            rev = (rev*10) + rem;  //reversed number
            temp /= 10;
        }
        if((*(arr+i) == rev) || *(arr+i) == 0)
        {
            count++;
        }
    }
    printf("Total palindrome = %d", count);
    return 0;
}
```

Output



Question – 3

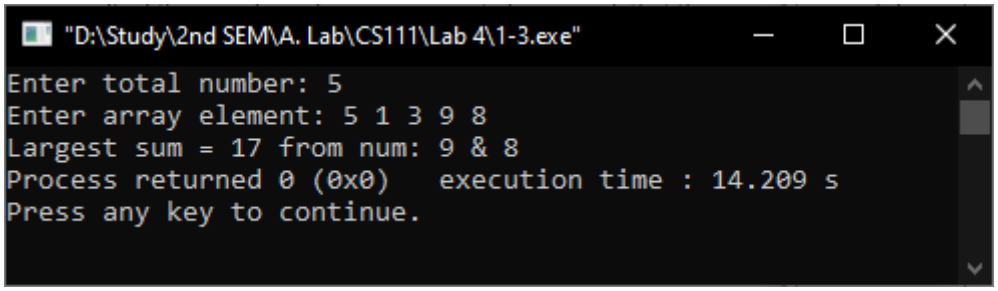
Find the pair of numbers in an unsorted array such that their sum is the largest

Answer

```c
#include<stdio.h>
int main()
{
    int n, i, j, sum=0, num1, num2;
    printf("Enter total number: ");
    scanf("%d", &n);
    int arr[n];
    printf("Enter array element: ");
    for(i=0; i<n; i++)
    {
        scanf("%d",(arr+i));
    }
    for(i=0; i<n-1; i++)
    {
        for(j=i+1; j<n; j++)
        {
            if(sum < (*(arr+i)+*(arr+j)))  //largest sum
            {
                sum = (*(arr+i)+*(arr+j));
                num1 = *(arr+i);
                num2 = *(arr+j);
            }
        }
    }
```

```
    printf("Largest sum = %d from num: %d & %d", sum, num1, num2);
    return 0;
}
```

Output



Strings

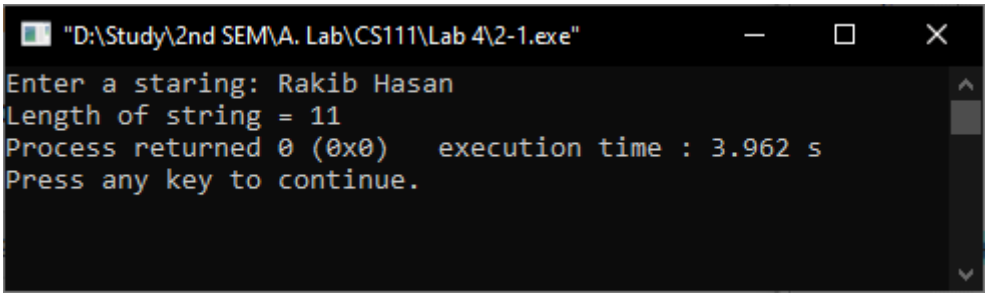
Question – 1

To read a string and find its length without using a library function

Answer

```
#include<stdio.h>
#define MAX_SIZE 1000
int main()
{
    char str[MAX_SIZE];
    printf("Enter a staring: ");
    scanf("%[^\n]%*c", str);  // take input until new line
    int i=0, len=0;
    while(str[i] != '\0')  //null character
    {
        len++;
        i++;
    }
    printf("Length of string = %d", len);
    return 0;
}
```

Output



Question – 2

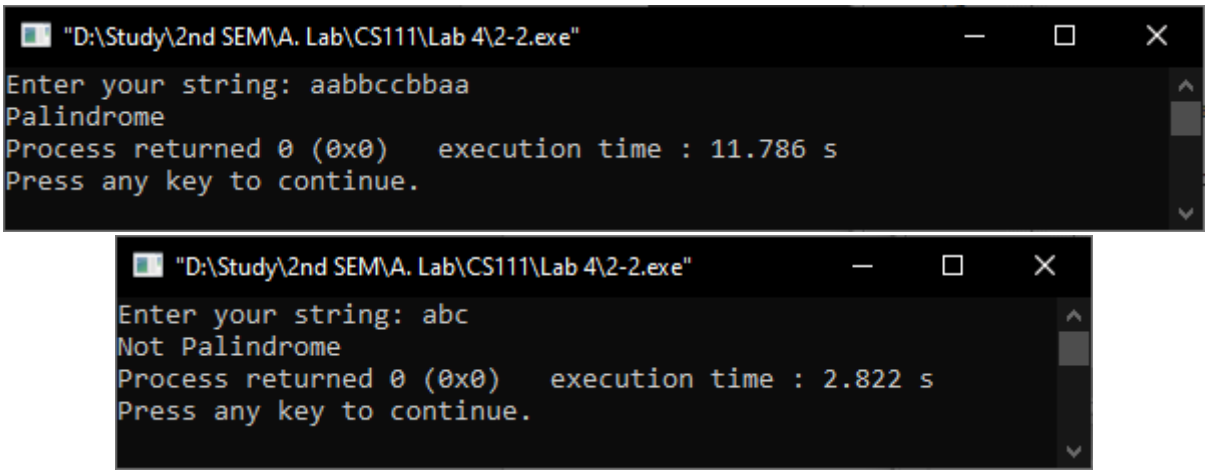
To reverse a string and check whether the string is palindrome or not

Answer

```c
#include<stdio.h>
#include<string.h>
#define MAX_SIZE 1000
int main()
{
    char str[MAX_SIZE];
    printf("Enter your string: ");
    scanf("%[^\n]%*c", str);
    int i, len, res=1;
    len = strlen(str);   //length of string
    for(i=0; i<len; i++)
    {
        if(str[i] != str[len-1-i])
        {
            res = 0;
            break;
        }
    }
    if(res==1)
    {
        printf("Palindrome");
    }
    else
```

```
    {
        printf("Not Palindrome");
    }
    return 0;
}
```

Output



Question – 4

Program to replace lowercase characters by uppercase & vice-versa

Answer

```
#include<stdio.h>
#include<string.h>
#define MAX_SIZE 1000
int main()
{
    char str[MAX_SIZE], temp;
    printf("Enter string: ");
    scanf("%[^\n]%*c", str);
    int i, len;
    len = strlen(str);
    printf("Output: ");
    for(i=0; i<len; i++)
    {
        temp = *(str+i);
```

```
        if(temp>= 'a' && temp<='z')
        {
            str[i] = temp-32;  // a-32 = A (ASCII)
        }
        else if(temp>= 'A' && temp<='Z')
        {
            str[i] = temp+32;  // A+32 = a (ASCII)
        }
        printf("%c", *(str+i));
    }
    return 0;
}
```

Output